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(54) APPARATUS AND METHOD FOR BATHING INVALIDS

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1 APPARATUS AND METHOD FOR BATHING INVALIDS

BACKGROUND OF THE INVENTION

5 The present invention relates to bathing devices,  
and in particular to an arrangement for bathing invalids  
and others with impaired ambulatory ability.

10 The bathing of invalids in hospitals, nursing  
homes, convalescent and retirement centers, home care units,  
and other similar institutions and facilities is a very  
serious and difficult problem. Recent surveys have indicated  
that there are literally millions of people in the United  
States with physical impairments which are sufficiently  
severe to require other than conventional bathing facilities.  
15 Quadriplegics, paraplegics, amputees, birth defected,  
mentally handicapped, stroke victims, arthritics, heavily  
medicated, aged or terminally ill patients are examples of  
just some of those who typically require specialized bathing.  
Regular bathing is essential not only for the hygiene of  
the patient, but is also used extensively as a treatment, and  
in conjunction with various types of therapeutic procedures.  
20 Because of their physical impairment, many invalids are  
relegated to sponge baths, and to the indignity of having  
another person bathe them.

25 The use of conventional bathtubs for bathing  
invalids and other handicapped persons who experience  
difficulty getting into and out of a normal bathtub, is  
generally considered impractical because of the hazard of  
injury to the patient and the extensive supervision and

1 assistance required. Attendants find that the physical  
labor involved in transferring a patient from a wheelchair  
into an ordinary type of bathtub is not only very tiresome  
and strenuous, but also very dangerous to the patient,  
5 as the hazard of slipping or otherwise falling is quite high  
in tiled, wet bathing areas. Since some infirm patients  
are unable to step over the edge of a conventional bathtub,  
or even negotiate the small step at the entrance of a shower  
enclosure without assistance, attendants must be available  
10 at all times, and closely supervise all patient bathing.

Heretofore, various structures have been devised  
for bathing invalids, including chair lifts for bathtubs,  
sliding seat shower stalls, and the like. However, these  
devices are typically quite expensive to manufacture,  
15 require substantial floor space to operate, and do not  
appreciably alleviate the safety hazards associated with the  
transference of the patient in and out of the bathing unit.  
These devices have a complicated construction which is quite  
difficult to repair and maintain. Also, some of the prior  
20 bathing units, particularly those of the chair lift type,  
are quite intimidating to the patient, uncomfortable, and  
often considered somewhat dehumanizing by more sensitive  
patients.

Although some prior bathing structures are of a  
25 walk-in variety, having a lateral opening and a sealing  
door, patients cannot be easily transferred directly into  
these bathing units from a sitting position, such as from a  
wheelchair or the like. Rather, the patients must be lifted  
to a standing, or partially erect position, and then bodily  
30 moved into the bathtub. Further, the seals on the closures  
for such bathing units are quite complex, expensive, and

1 deteriorate quickly.

SUMMARY OF THE INVENTION

5 One aspect of the present invention is a bathtub having a lateral opening in one side of sufficient size to permit invalid ingress and egress therethrough. The opening is defined by a lip, and has a generally wedge-shaped contour which opens upwardly. A door selectively closes the opening, and includes a sealing edge with a generally wedge shape which conforms with the contour of the lip. A compression seal is connected with the door sealing edge, and the door is vertically translated between an open position, wherein invalid movement through the opening is permitted, and a closed position, wherein the door and the bathtub converge to compress the seal between the lip and the door edge and form a durable, reliable and uncomplicated seal which permits the bathtub to be filled to a level substantially above the base of the opening for immersal bathing of the invalid.

20 Another aspect of the present invention is a bathing apparatus for invalids, comprising a bathtub with a lateral opening and a sealed door selectively closing the opening. The door is slideably mounted on a pair of tracks disposed on opposite sides of the door, whereby the door is vertically translated upwardly from the closed position, and rotated into a substantially horizontal, overhead, storage position.

25 Yet another aspect of the present invention is a combination shower and bath unit, comprising an enclosure with a bathtub and shower walls upstanding from both ends and a rearward side of the tub to form a stall. The bathtub includes a raised seat portion, a back extending generally

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1 upwardly from the seat, and a foot portion positioned below  
and forwardly of the seat. The seat has an anatomical  
contour which forms a chair shape for supporting an invalid  
in a seated position in the bathing unit. The bathtub  
5 includes a lateral opening and sealed door arrangement to  
permit easy access to the unit. At least one shower head is  
mounted on one of the stall walls, and is oriented toward  
the seated invalid, whereby the unit is capable of both  
immersal bathing and showering the invalid for hygiene and  
10 therapy. The bathtub seat is preferably disposed at an  
elevation substantially commensurate with the seat of a  
conventional wheelchair, so that the invalid may be later-  
ally transferred onto the seat. Also, the entire side of  
the bathtub is bodily removable so as to fully expose the  
15 bathtub seat and thereby facilitate shifting the patient  
into the bathtub unit from a wheelchair.

Yet another aspect of the present invention is a  
method for bathing invalids, comprising removing a lateral  
door from a bathing unit to fully access an open side, and  
20 positioning a wheelchair parallel with the bathing unit and  
beside an exposed seat portion of the tub. The arm of the  
wheelchair disposed closest to the bathtub is removed, and  
the attendant grasps the upper body of the invalid and lifts  
him slightly upwardly to remove his weight from the wheel-  
25 chair seat, and simultaneously laterally shifts the invalid  
from the wheelchair onto the bathtub seat by translating the  
invalid along a slightly arcuate, horizontal path, which  
permits the attendant to keep his feet fixed in position  
adjacent the base of the bathtub, and maintain the weight of  
30 the invalid close to the attendant's body. When the atten-  
dant has set the invalid down, the invalid is seated at an

1 angle to the longitudinal centerline of the bathtub, with  
his feet hanging over the outer edge of the seat portion,  
whereby the far side of the bathtub acts as a backrest for  
supporting and confining the invalid in the seat. The legs  
5 of the invalid are then lifted slightly and rotated into the  
foot portion of the bathtub, thereby simultaneously rotating  
the torso of the invalid into substantial alignment with the  
bathtub. The door is then replaced in the bathtub opening,  
thereby forming a watertight seal therebetween for either  
10 shower or immersal bathing of the patient.

The principal objects of the present invention are  
to provide a bathing apparatus for invalids, comprising a  
vertically sliding, wedge shaped door and lateral opening to  
facilitate access to the bathtub, with a compression seal  
15 which is quite durable, relatively uncomplicated and in-  
expensive, and sufficiently effective to remain watertight  
even when the tub is filled to a level substantially above  
the base of the opening for immersal bathing of the invalid.  
The bathtub has a chair-shaped, anatomical contour, with  
20 integral armrests, so that the patient can be comfortably  
bathed by either shower or immersion. The entire side of  
the bathtub opens to fully expose the seat and back, and  
thereby facilitate positioning the patient therein. The  
door is mounted on a counterbalance, overhead, track assem-  
25 bly for accurate positioning of the door, and greatly  
reducing the floor space required to operate the unit.  
Shower stall walls extend around the bathtub on three sides  
thereof, and include a plurality of shower heads mounted  
thereon, so that the patient can be bathed by either shower  
30 or immersion for hygiene and therapy. The shower heads are  
arranged so that they can be used to warm the tub before the

1 patient is seated therein. An inset is provided in a foot  
well portion of the bathtub, so that an attendant can easily  
transfer the patient from a wheelchair onto the tub seat,  
while maintaining the patient's weight near the attendant's  
5 body to reduce strain. A concave notch is located in the  
door directly above the tub foot well to facilitate cleansing  
the patient's feet and legs. A channel is provided in the  
medial portion of the seat, with a water spray head mounted  
therein for cleansing the patient's perineal area.

10 These and other features, advantages and objects  
of the present invention will be further understood and  
appreciated by those skilled in the art by reference to the  
following written specification, claims and appended drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

15 Fig. 1 is a perspective view of a bathing unit  
embodying the present invention taken from the front there-  
of, with a door shown in an overhead storage position, and  
portions of the unit broken away to reveal internal con-  
struction.

20 Fig. 2 is a front perspective view of the bathing  
unit, with the door shown in a closed position, and portions  
of the unit broken away.

Fig. 3 is a perspective view of the bathing unit  
taken from the top and slightly forwardly thereof, with the  
25 door shown in a closed position, and upstanding sidewalls  
broken away.

Fig. 4 is a vertical cross-sectional view of the  
bathing unit taken along the line IV-IV, Fig. 2.

Fig. 5 is a vertical cross-sectional view of the  
30 bathing unit taken along the line V-V, Fig. 2.

Fig. 6 is a lateral cross-sectional view of a

1 compression seal.

Fig. 7 is a fragmentary vertical cross-sectional view of the bathing unit showing the seal compressed in a closed door position.

5 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

For purposes of description herein, the terms "upper", "lower", "right", "left", "rear", "front", "vertical", "horizontal" and derivatives thereof shall relate to the invention as oriented in Fig. 1. However, it is to be understood that the invention may assume various alternative orientations, except where expressly specified to the contrary.

The reference numeral 1 generally designates a bathing unit embodying the present invention, comprising an enclosure 2 with a bathtub 3 and upstanding walls 4 which form a shower stall. Bathtub 3 includes a seat 5 having an anatomical contour, and is split vertically adjacent the outer edge to form a lateral opening or face along lip 6 to permit invalid ingress and egress. A door 7 with a generally wedge-shaped contour mates with and selectively closes the bathtub opening, and includes a compression seal 8 along its bottom edge which is compressed when the door is closed, and forms a seal which is sufficiently leakproof to permit immersal bathing of an invalid disposed on the bathtub seat 5. Door 7 is slideably mounted on a hingeless track assembly 9, which vertically translates the door into the closed position (Fig. 2) and pivots the door as it is raised into a horizontal, overhead storage position (Fig. 1). Shower heads 10 are mounted on the stall walls 4 to provide both shower and immersal bathing for hygiene and therapy. The bathtub seat 5 and the tub opening are mutually oriented to



1 permit an attendant to laterally move an invalid directly  
from a wheelchair onto the bathtub seat with minimum strain  
and hazard.

5 The bathtub 3 (Fig. 1) comprises a seat 14, a back  
15, and foot well 16, which are integrally molded in one  
piece from a durable, rigid, non-corroding material, such as  
fiberglass or the like. The seat 14 is disposed at an  
elevation substantially coextensive with that of a con-  
ventional wheelchair, and is inclined slightly to the rear.  
10 As best illustrated in Figs. 3 and 4, a U-shaped trough or  
channel 17 is disposed in the medial portion of seat 14 and  
oriented longitudinally therein. Trough 17 extends from the  
middle of seat 14 through wall 18 at the forward edge 19 of  
the seat, and is anatomically shaped and positioned to  
15 expose the perineal area of a bather sitting on the seat.  
A spray nozzle 20 is mounted in one side of trough 17 with  
the discharge orifice oriented generally upwardly and is  
activated to gently cleanse the perineal area of the in-  
valid's body. The forward edge 19 of the seat is rounded,  
20 and the rearward edge is arcuately shaped and blends smoothly  
with back 15. As best illustrated in Fig. 4, seat 5 includes  
lateral sidewalls 21 which extend upwardly from the seat 14  
and include ledges 22 which form arm rests for the bather.  
Back 15 (Fig. 1) is angled slightly rearwardly, so that the  
25 patient is seated in a slightly reclined position in the  
bathing unit. The foot well 16 is disposed below and for-  
wardly of seat 14, and as best illustrated in Figs. 3-5, is  
a shallow reservoir with a drain 23 mounted therein. Foot  
well 16 tapers inwardly toward the front of the bathtub, and  
30 includes a base 24 having a substantially trapezoidal  
shape. An upwardly inclined kick wall 25 extends from the

1 forward edge of base 25, and a front panel 26 extends there-  
from to the upper edge or rim 27 of the bathtub. Front  
panel 26 (Fig. 1) has a bifurcated construction which pro-  
trudes forwardly toward the seat and includes a substan-  
5 tially triangular side elevational shape forming the forward  
portion of a splash guard or rail, described in detail  
below. A spout 28 (Fig. 5) is mounted in a vertical cavity  
or depression 29 in the front splash guard, and is plumbed  
to deliver water to the bathing unit. An overflow drain 30  
10 is mounted in depression 29 directly below spout 28, and  
prevents the water level in the tub from rising above the  
drain. An inwardly protruding rim 32 (Figs. 4 and 5)  
extends around the front and sides of the tub, and forms a  
splash guard or rail to prevent water from spilling over the  
15 sides of the tub, particularly when the unit is used with a  
hydromassager (not shown). Rim 32 is formed by a pair of  
inclined ledges or walls 32a, which are integrally joined at  
a rounded edge. The upper legs 32a on the left-hand side of  
the tub provide a surface on which a control panel 33 is  
20 mounted. In this example, control panel 33 includes three  
hydraulic toggle valves 34 which individually control the  
flow of water through shower heads 10 and nozzle 20. A main  
valve 35 controls the flow of water through spout 28 and  
shower heads 10, and an automatic mixer 36 controls the  
25 temperature of the water emitted from either the spout or  
the shower heads. The tub also includes left and right-hand  
sidewalls 37 and 38 respectively, which extend upwardly from  
the side edges of base 24 to rim 27, blend integrally into  
the armrest walls 21 and 22, and kick wall 25, and include  
30 the associated portion of splash rail 32.

As best illustrated in Fig. 3, bathtub 3 has a

1 symmetrical top plan shape, and is vertically split, so as  
to define a stationary half 40 in which seat 14, back 15  
and foot well 16 are located, and a movable half, consisting  
5 of door 7, which is bodily removable from stationary half 40  
to access opening 41 through which the bather enters and  
exits the unit. The part 42 between stationary tub half 40  
and door 7 extends through rim 27 at the forward end of the  
tub, vertically downwardly through the outer tub side 38  
at a location slightly outwardly and upwardly from the front  
10 and base walls 24-26, such that foot well 16 is an integrally  
formed, rather shallow, watertight reservoir. Part 42  
extends from the rearward portion of foot well 16 vertically  
upwardly along the intersection of back wall 18 and sidewall  
38, and then extends rearwardly along seat 14, slightly  
15 inwardly of the intersection of seat 14 and the wall 21  
forming the side of the right-hand armrest 22. Part 42 then  
extends upwardly along back 15 to the rear of rim 27.

Lip 6 extends along part 42 and defines the opening  
41 through which the bather ambulates to access the tub.  
20 Opening 41 and lip 6 are generally wedge-shaped, as viewed  
in side elevation, and open upwardly. The term "wedge-shaped"  
as used herein refers to the mutual orientation of the various  
portions of lip 6, wherein opposing sides of the lip are  
not parallel, but rather diverge in an upwardly direction.  
25 The opening 41 is disposed parallel with the sides of seat  
14, so that an invalid can be shifted laterally onto the  
tub seat from a sitting position. Lip 6 includes a depend-  
ing flange 44 (Figs. 4 and 5) which extends over the upper  
edge of a side panel 45 disposed on the exterior side of  
30 the stationary tub half 40. The location of part 42 along  
the outer side edges of the back and seat provides full,

1 unhindered access to the tub seat 5 to facilitate placing a  
 5 bather in the unit, as described in greater detail here-  
 inafter.

As best illustrated in Fig. 3, the location of  
 5 part 42 along the base 24 of foot well 16 forms a lateral  
 inset at that area which is shaped to provide access for the  
 leg of an attendant, so that the attendant can maintain the  
 weight of the invalid close to his body, as well as near the  
 center of the seat, when an invalid is being shifted between  
 10 the tub and a wheelchair. Also, the entire bathing unit 1  
 is raised on a frame 47 to form a toe space 48 along the  
 front of the unit which allows the attendant to position  
 his feet closer to the center of seat 14 for reducing the  
 physical strain and safety hazards normally associated with  
 15 patient transfer. Because the tub has a rather large head  
 of water when full, drain 23 preferably includes a valve  
 which is hydraulically operated by a remote toggle valve  
 34a, mounted on control panel 33. Toggle valve 34b controls  
 a second valve (not shown) which directs the pressurized  
 20 water from the mixer to either spout 28 or the shower heads  
 10. A hand-held shower wand (not shown) may also be pro-  
 vided to facilitate washing the hair of the invalid and  
 other similar uses.

Door 7 (Figs. 1 and 2) has a substantially  
 25 planar exterior side 50 and an interior side 51 with a  
 portion of the tub interior molded integrally therewith to  
 mate with the contour of the stationary tub half 40 when  
 the two halves are converged vertically. The contoured  
 interior surface 49 on door 7 includes the right-hand armrest  
 30 22 (with respect to a seated bather), the right-hand side  
 38 of the tub, and the outer portion of splash rail 32

1 and tub rim 27. The contoured door surface 49 projects  
from door interior 51, and includes a sealing edge 52 along  
its margin with an outer, marginal ledge or relief 52a  
(Fig. 7) in which a compression seal 53 is mounted by means  
5 such as an adhesive. Sealing edge 52 has an upwardly  
opening, wedge shape which conforms with the contour of lip  
6. As best illustrated in Fig. 2, the rim 27 along door 6  
includes a notch or indentation 54 disposed directly above  
the tub foot portion 16 to improve attendant access to the  
10 feet and legs of the bather.

With reference to Figs. 6 and 7, the illustrated  
compression seal 8 has a rectangular lateral cross-sectional  
shape, with ribs or beads 56 extending longitudinally along  
the lower surface of the strip to facilitate sealing contact  
15 with lip 6. Seal 8 includes a pair of centrally disposed  
channels 57, and is constructed from a durable, resiliently  
compressible material such as a closed celled foam like  
neoprene. The seal is mounted in relief 52a, and is laterally  
flexible to follow the contour of sealing edge 52.

20 The track assembly 9 (Figs. 1 and 2) to which door  
7 is slideably mounted vertically translates the door into  
the closed position shown in Fig. 2, and pivots the door as  
it is raised into a horizontal, overhead storage position,  
as shown in Fig. 1. In this example, rails 59 (Fig. 5)  
25 are attached to the sidewalls 4 of the enclosure, and have a  
generally inverted L-shape, with front rail sections 60  
extending along the forward edge of the stall walls, angled,  
interconnecting segments 61, and horizontal segments 62  
which extend rearwardly over the tub along the upper edge of  
30 the stall sidewalls. Rail segments 60-62 are interconnected  
by means such as welds to form a rigid structure having

1 a generally U-shaped transverse cross-sectional shape  
(Fig. 3). Each end of door 7 includes a pair of rollers 63  
respectively mounted at the upper and lower edges thereof by  
a bracket 64. Rollers 63 are positioned inside the asso-  
5 ciated rails 59, and thereby slideably mount the door on  
the rails. In the closed position, track assembly 9 retains  
door 7 in a substantially vertical orientation, so that the  
door converges abuttingly against lip 6 in a vertical plane.  
By lifting door 7, the door is translated on the track  
10 assembly in a vertical plane, until the upper rollers 63  
engage the inclined track segment 61, at which time further  
door translation pivots the door into a substantially hori-  
zontal orientation directly over the tub, thereby providing  
an overhead door arrangement which requires minimum floor  
15 space for operation. The height of horizontal rail segments  
63 is selected so that the door, when fully open, is disposed  
well above the head of either the attendant or the bather.  
A counterbalance mechanism 65 (Fig. 1) is attached to door  
7, and assists in raising the door to the overhead position,  
20 as well as retaining the door stationary in any selected  
position. In this example, counterbalance assembly 65  
comprises a flexible cable 66 attached to the lower edge of  
door 7, extending in rails 59, and wound about an axle  
mounted drum 67 with a torsional coil spring 68 mounted  
25 on the axle 69.

A lock 70 (Fig. 2) is provided to positively  
retain door 7 in the closed position, with seal 8 compressed  
firmly between door edge 52 and tub lip 6 to form a water-  
proof seal. In this example, lock 70 comprises a pair of  
30 wedge-shaped bolts 71 mounted in opposite sides of door 7  
which are received in associated plates 72 anchored in the

1 tub sidewalls. To lock door 7 closed, bolts 71 are extended  
outwardly into plates 72 by means such as an electrically  
activated solenoid 73, a mechanical foot pedal, or the like.  
Abutment between wedge bolt 71 and plate 72 both forces  
5 door 7 downwardly to further compressing seal 8, and  
positively locks the door in the closed position. It is  
to be understood that the present invention also contemplates  
other means for securely locking the door closed.

Bathing apparatus 1 can be manufactured as either  
10 a freestanding unit, or as a structure to be built into a  
building. The front shower head 10 (Fig. 5) is mounted in  
recess 29 directly below overflow drain 30, and is fan-shaped  
to spray water on the invalid from his chest to his feet.  
The rear shower head 10 (Fig. 4) is mounted centrally in  
15 rear stall wall 4, such above rim 27, and has a spray  
pattern designed to impinge upon the neck and the upper  
back portion of the invalid which projects over rim 27.

In the bathing of an invalid, the attendant  
preferably initially warms the tub by turning on shower  
20 heads 10 with door 7 in the closed position. After the  
bathtub walls have been warmed to a comfortable temperature,  
the attendant turns off the water, unlocks door 7, and  
raises the door to the overhead storage position shown in  
Fig. 1. The invalid, who is typically seated in a wheel-  
25 chair, (not shown), or other conveyance device, is then  
positioned along side the open bathing unit, with the chair  
wheels in a parallel relationship with the open side of  
the bathtub, and disposed directly beside seat 14 with the  
invalid facing forwardly. The arm of the wheelchair disposed  
30 closest to the bathtub is then removed or folded down, and  
the attendant positions himself facing the invalid, placing

1 his right foot in inset 43, with his toe extending into toe  
space 48, and his left foot laterally offset from his right  
foot a comfortable distance, so as to provide a secure,  
comfortable stance. The attendant then grasps the upper  
5 body of the invalid, and lifting upwardly, raises the  
patient only a distance sufficient to remove his weight from  
the wheelchair seat, and simultaneously shifts the invalid  
laterally from the wheelchair onto the bathtub seat portion  
5. During this shifting, the invalid is translated along a  
10 slightly arcuate, horizontal path which permits the atten-  
dant to keep his feet fixed or planted in position adjacent  
the base of the bathtub, and thereby maintain the weight of  
the invalid close to his body so as to alleviate strain and  
hazard. The pivoting motion of the attendant as he shifts  
15 the patient from the wheelchair seat onto the bathtub seat  
is the natural twisting action of this body. When the  
attendant sets the invalid down, the latter is seated at an  
angle to the longitudinal centerline of the bathtub, with  
his feet hanging over the outer edge of the seat 14. As the  
20 attendant sets the patient down into this position, the  
inner side 37 of the bathtub, along with the left-hand  
armrest 22, acts as a backrest, to support and confine the  
invalid in the bathtub seat. The attendant then lifts the  
legs of the invalid over the outer edge of the bathtub foot  
25 well 16, and rotates his feet into the foot well, thereby  
automatically and simultaneously rotating the torso of the  
invalid into a substantially aligned orientation with the  
longitudinal centerline of the bathtub. The patient is then  
maneuvered laterally squarely onto the seat, and door 7 is  
30 pulled downwardly into the closed position and locked  
securely in place.



1           In the event the arm of the wheelchair is fixed,  
 or otherwise cannot be removed, the attendant must lift the  
 invalid into a partially erect position, a sufficient height  
 off of the wheelchair seat that his body will pass over the  
 5   wheelchair arm. In a manner similar to that described  
 hereinabove, the attendant then simultaneously lowers and  
 pivots the patient from this partially erect position onto  
 the bathtub seat.

          If the invalid is ambulatory, he merely seats  
 10 himself on seat 14, in substantially the same position  
 described above when the attendant places non-ambulatory  
 patients on the seat. An attendant will generally be  
 required to at least supervise entry and exit from the bathing  
 unit, as well as operate door 7.

15           After the bathing unit has been sealed closed, the  
 attendant manipulates mixer 36 to adjust the temperature of  
 the water to the desired level. Drain control 30 is man-  
 ipulated to close the drain for immersal bathing of the  
 invalid, and is generally kept open for showering the  
 20 invalid. Control valve 35 is manipulated attendant to open  
 the flow of water into the bathtub through spout 28. The  
 shower heads 10 are individually activated by shifting  
 toggle switches 34. Bathing of the perineal area is accom-  
 plished by manipulation of toggle valve . The door  
 25 notch 54 facilitates access by the attendant to the legs and  
 feet of the bather.

          After the invalid has been bathed, the attendant  
 unlocks the door and lifts the same upwardly into the over-  
 head storage position. (Fig. 1). The patient's feet are  
 30 swung outwardly from foot well 16, so that his legs extend  
 over the outer edge of the seat. The patient is then

1 laterally shifted by the attendant back onto the wheelchair  
seat by reversing the steps employed to place the patient  
into the bathtub.

5 The upwardly oriented wedge-shaped bathtub opening  
and door employ a relatively uncomplicated inexpensive  
compression seal which is quite durable, and sufficiently  
effective to maintain the bathtub watertight, even when  
water is filled in the tub to a level substantially above  
the base of the bathtub opening for immersal bathing of the  
10 invalid. The chair-shaped, anatomical contour of the bath-  
tub allows the invalid to rest comfortably while being  
bathed, and the entire side of the bathtub opens to fully  
expose the seat and back and thereby facilitate positioning  
the patient in the tub. The door is slideably mounted on a  
15 counterbalance, overhead track assembly, thereby greatly  
reducing the floor space required to operate the unit, and  
accurately positioning the door in a sealing relationship  
with the bathtub lip. The shower stall walls with multiple  
shower head arrangement permit the patient to be bathed by  
20 either shower or immersion for hygiene and therapy. The  
inset and toe space at the foot well of the tub allows the  
attendant to transfer the bather to and from a wheelchair  
with a natural pivoting motion, while maintaining the weight  
of the patient near the attendant's body to reduce strain.

25 In the foregoing description, it will be readily  
appreciated by those skilled in the art that modifications  
may be made to the invention without departing from the  
concepts disclosed herein. Such modifications are to be  
considered as included in the following claims, unless these  
30 claims by their language expressly state otherwise.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows.

-1-

1 A bathing apparatus for invalids, comprising:  
a bathtub having a lateral opening in a side  
thereof with sufficient size to permit invalid ingress and  
egress therethrough; said lateral opening being defined by  
5 a lip, and having a generally wedge-shaped contour which  
opens upwardly;  
a door selectively closing said opening, and having  
a sealing edge with a generally wedge shape which conforms  
with the contour of said lip;  
10 a compression seal connected with one of said lips  
and said door sealing edge;  
means for vertically translating said door between  
an open position wherein invalid movement through said opening  
is permitted, and a closed position wherein said door and  
15 said bathtub are converged to compress said seal between  
said lip and said door sealing edge and form a seal there-  
between which is leakproof when said bathtub is filled with  
water to a level substantially above a base portion of said  
lip for immersal bathing of an invalid; and  
20 means for selectively locking said door in the  
closed position.

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1 A bathing apparatus as set forth in claim 1,  
wherein:  
said door is slideably mounted on a pair of inverted,  
generally L-shaped tracks, which are supported on opposite  
5 sides of said door and oriented to translate said door

vertically into the closed position, and rotate said door as it is raised from the closed position into a substantially horizontal, overhead storage position directly over said bathtub.

-3-

1 A bathing apparatus as set forth in claim 1,  
wherein:

5 said opening comprises an entire side of said bathtub which extends from a front wall to a rear wall thereof to facilitate ingress and egress therethrough.

-4-

1 A bathing apparatus as set forth in claim 1,  
wherein:

5 said bathtub includes a seat portion disposed at an elevation substantially commensurate with the seat of a conventional wheelchair, a back portion extending generally upwardly from said seat portion, and a foot portion disposed below and forward of said seat portion; said seat, back and foot portions having an anatomical shape for supporting an invalid in a seated position; and

10 said opening extends along the entire side of said bathtub, exposing said seat, back and foot portions, for laterally shifting the invalid from a wheelchair disposed beside said bathing apparatus onto said bathtub seat portion.

-5-

1 A bathing apparatus as set forth in claim 1,  
including:

a plurality of shower heads mounted about an upper portion of said bathtub.

-6-

1 A bathing apparatus as set forth in claim 1,

-19-

wherein:

5           said bathtub lip includes a lateral inset at said  
base portion shaped to provide access for the leg of an  
attendant to facilitate shifting the invalid to and from  
said seat portion; and

          said door carries a contoured portion of the  
interior of said bathtub thereon.

-7-

1           A bathing apparatus as set forth in claim 2,  
wherein:

5           said bathtub includes a seat portion disposed at  
an elevation substantially commensurate with the seat of a  
conventional wheelchair, a back portion extending generally  
upwardly from said seat portion, and a foot portion disposed  
below and forward of said seat portion; said seat, back and  
foot portions having an anatomical shape for supporting an  
invalid in a seated position; and

10          said opening extends along the entire side of said  
bathtub, exposing said seat, back and foot portions, for  
laterally shifting the invalid from a wheelchair disposed  
beside said bathing apparatus onto said bathtub seat portion.

-8-

1           A bathing apparatus as set forth in claim 7,  
wherein:

5           said bathtub lip includes a lateral inset at said  
foot portion, shaped to provide access for the leg of an  
attendant to facilitate shifting the invalid to and from said  
seat portion; and

          said door carries a contoured portion of the  
interior of said bathtub thereon.

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-9-

1

A bathing apparatus as set forth in claim 8,  
including:

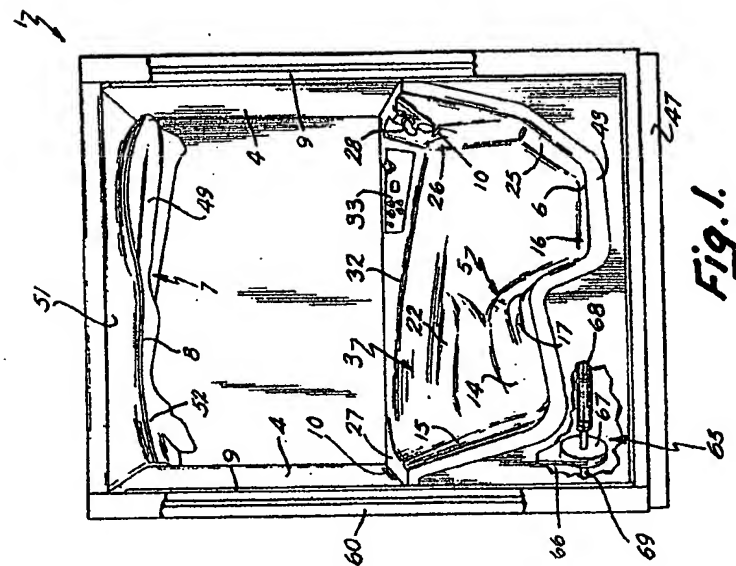
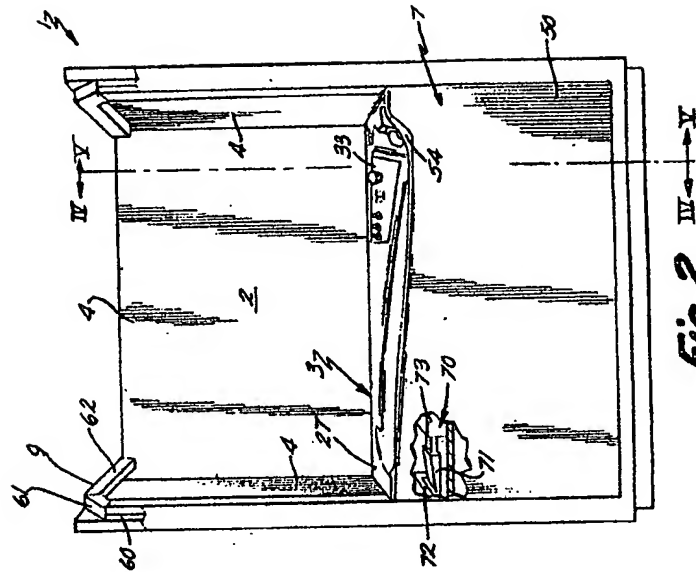
a plurality of shower heads mounted about an upper  
portion of said bathtub.

1

APPARATUS AND METHOD FOR BATHING INVALIDS

ABSTRACT OF THE DISCLOSURE

5 An arrangement for bathing invalids, or others  
with impaired ambulatory ability, comprises an enclosure  
having a bathtub with upstanding walls which form a stall.  
The bathtub includes a seat having an anatomical contour and  
a lateral opening adjacent the seat to permit invalid  
10 ingress and egress. A door with a generally wedge-shaped  
contour mates with and selectively closes the bathtub  
opening, and includes a seal compressed between the opening  
lip and the door to form a seal which is sufficiently  
leakproof to permit immersal bathing of a seated invalid.  
The door is slideably mounted on a hingeless track assembly,  
which vertically translates the door into the closed position  
15 and pivots the door as it is raised into a horizontal,  
overhead storage position. Shower heads are mounted on the  
walls of the stall to provide both shower and immersal  
bathing for hygiene and therapy. The bathtub seat and  
opening are mutually oriented so as to permit an attendant  
20 to laterally move the invalid from a wheelchair directly  
onto the bathtub seat with minimum strain and hazard.





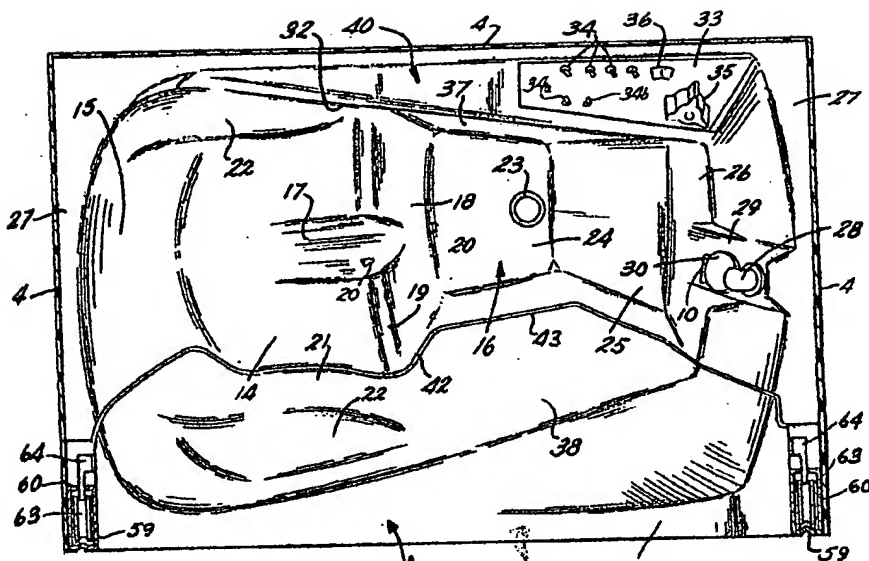


Fig. 3.

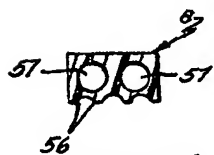


Fig. 6.

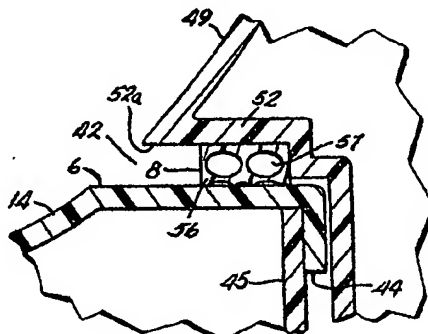
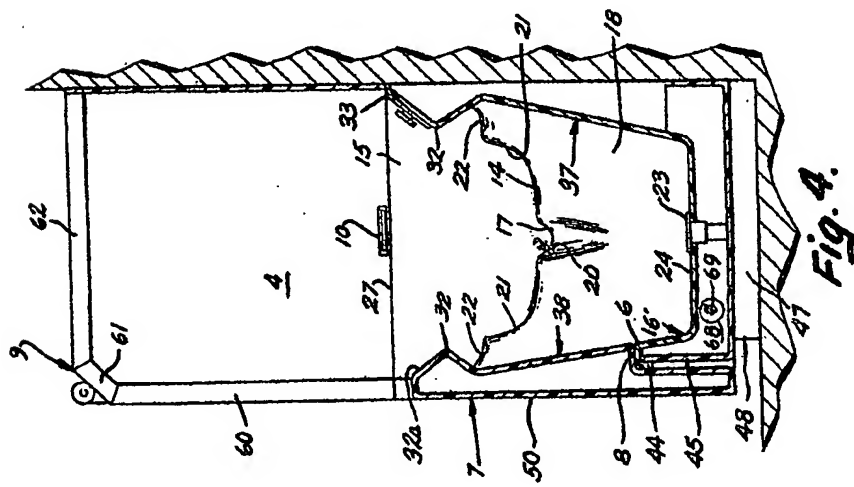
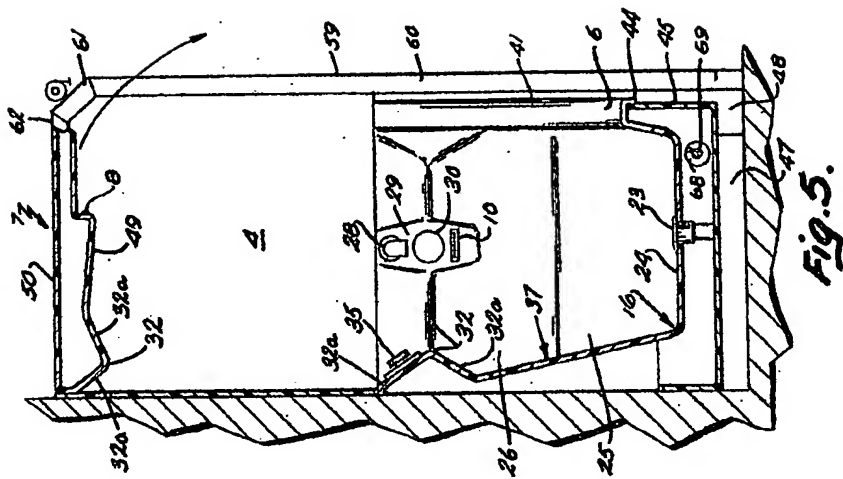


Fig. 7.



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